

ONLINE GROCERY SHOPPING APPLICATION (OGSA)

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Bachelor of Computer Science
(Software Engineering) with Honours

UNIVERSITI MALAYSIA PAHANG



SUPERVISOR'S DECLARATION

I hereby declare that I have read this project and in my opinion this project is sufficient in terms of scope and quality for the award of the degree of Bachelor of Computer Science (Software Engineering) with Honours.

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at University Malaysia Pahang or any other institutions.

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ABSTRAK

Projek ini adalah aplikasi beli-belah runcit mudah alih berasaskan web dan mudah alih untuk AKPS Cash & Carry. Matlamat projek ini adalah untuk menyampaikan aplikasi runcit dalam talian yang membolehkan para pelanggan membeli barangan runcit dalam talian yang mudah, cepat dan kos efektif melalui telefon pintar atau komputer riba mereka. Pada masa ini, pekerja Cash and Carry AKPS menghadapi masalah dalam mengendalikan lebih banyak pelanggan pada masa yang sama dan pemilik AKPS Cash & Carry juga ingin menaik taraf teknik perniagaan semasa yang merupakan sistem jualan manual. Sehingga, untuk AKPS Cash & Carry untuk memperluaskan perniagaan kedai dan membawa jualan runcit ke dalam talian. Dengan membuat sistem jualan secara dalam talian, pelanggan boleh melawat laman web AKPS Cash & Carry pada bila-bila masa tidak kira pada waktu siang atau malam. Membeli-belah dalam talian biasanya tersedia 24 jam sehari dan ramai pelanggan mempunyai akses internet di tempat kerja dan di rumah. Jadi, sangat mudah bagi mereka yang membeli barang runcit dari rumah dalam talian. Selain itu, aplikasi ini membolehkan pelanggan membuat pembayaran pembelian melalui pembayaran dalam talian melalui PayPal menggunakan internet. Di samping itu, aplikasi ini membolehkan pekerja mengurus produk dan menjana laporan berkaitan perniagaan AKPS Cash & Carry dan membantu untuk menjejaki maklumat jualan. Aplikasi ini dibangunkan menggunakan metodologi yang spesifik iaitu Waterfall kerana cara ini dapat direka bentuk untuk menyediakan pembangunan yang lebih cepat dan hasil yang berkualiti tinggi. Sebagai kesimpulan, membeli-belah dalam talian adalah salah satu aspek terbesar dalam internet hari ini. Dengan memilih untuk berbelanja pelanggan dalam talian akan dapat memperoleh banyak manfaat untuk pelanggan, ia membantu pelanggan untuk menjimat masa mereka, wang dan barangan mereka di kedai dalam talian adalah sangat pelbagai dan sangat mudah untuk semua orang.

ABSTRACT

This project is a web based and mobile friendly online grocery shopping application for AKPS Cash & Carry. The aim of this project is to deliver an online grocery application which is allow the customers to buy the groceries online which is simple, fast and cost effective via their smartphones or laptops. Currently, AKPS Cash and Carry staffs find difficulties in handling more customer at a time and the AKPS Cash & Carry owner also want to upgrade the current business technique which is manual sales system. So that, for AKPS Cash & Carry to expand the business of the shop and bring the grocery sales to be online. By making the sales system online, customers can visit AKPS Cash & Carry websites at any time of day or night. Online Shopping are usually available 24 hours a day and many customers have internet access both at work and at home. So, it is very convenient for them to purchase households online. Moreover, this application allows the customers to make their purchase payment through online payment through PayPal payment gateway over the internet. Besides that, this application allows the staffs to manage the products and to generate business related reports of the AKPS Cash & Carry and it helps to keep track the sales information's. This application is develop using Waterfall methodology as it is designed to provide faster development and high-quality results. In conclusion, online shopping is one of the greatest aspects of the internet today. By choosing to shop online customer will be able to get many benefits for customers, it helps customer to save their time, their money and goods in online shop are so variety and its very convenient for people.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Online Grocery Shopping Application (OGSA) will be developed for AKPS Cash & Carry Sdn.Bhd. where the purpose of this application is to manage all the information of the online grocery shopping. Online Grocery Shopping allow the customer to purchase products through internet by browsing the websites domain name. The AKPS Cash & Carry sells grocery items that we use in our daily life and also Indian devotional items. This shop is the center point of four residential area, Taman Indah Jaya, Taman Tun Sambathan, Taman Wawasan and Kampung Bukit Palong. About 500 household residents buy their daily grocery needs from this shop. As such, from the online grocery application development it is expected to make the daily tasks easier and convenient for the staffs in the shop and also the customers.

Currently AKPS Cash & Carry maintaining manual system to manage all the data of their sales. Manual system has lacking and problem such as loss data, misplaced and more else. In this technologized world nowadays, it is no more possible to maintain manual systems in organizations. Moreover, AKPS Cash & Carry shop must use Online Grocery Shopping Application for quick access of data and to provide efficient service for the customers.

The Online shopping application will be very useful for the customers nowadays since people are becoming very busy taking care of their life chores. The customers are able to purchase groceries right on time without having the difficulties to travel to the shop.

The customers just need few minutes to get their list done online. The customers do not need to worry of being cheated as online shopping applications are already a rising aspect for our citizens to buy things in a very easy and reliable way. The application is secured enough to conduct a safe transaction as well for the customers. Apart from that, the purchased items will be delivered in a very appropriate time consumption.

As a conclusion, the purposed system will be a good opportunity for the customers to purchase the grocery items easily. It also will be very convenient for the customers to purchase grocery items from anywhere and anytime. By using this application, the customers can save their shopping time and there are no needs to strain themselves to go cash & carry daily to make purchases. This system will also be more useful to the staff when the manual product maintaining system be computerized which will consume less time for the shop owner to update the purchasing details of the products. It will be efficient and reliable enough for both customers and seller to purchase and save data respectively.

1.2 Problem Statements

Time consuming is a major issue for customers with the current sales system in AKPS Cash & Carry. Long queue in cashier counter make the billing process slow and the attention towards customers lacks. It is also a time constraint for the customers who are in a rush to get their groceries done.

Another issue is, when customers depending on their own schedule, the business hours of AKPS Cash & Carry might be inconvenient for the customers to buy the grocery items. Basically, AKPS Cash & Carry shop open late morning and close before most of the customers return back to home from work.

Lack of staffs in the AKPS Cash & Carry also being a concern which causes them to entertain their customers less. It takes time for the employees to help each customer to find their groceries if they are in need.

1.3 Objectives

The aim of this project is to develop Online Grocery Shopping Application (OGSA) and to support this Online Grocery Shopping the following objectives are as below:

- I. to propose and design a web based online shopping application system;
- II. to implement online grocery shopping using Java programming language;
- III. to evaluate the functions of Online Grocery Shopping Application system;

1.4 Scope

The project scope is to develop an Online Grocery Shopping Application (OGSA). The online grocery shopping application created for AKPS Cash & Carry to make grocery purchase online through internet via smartphones or computers. This OGSA system mainly developed for residents nearby the AKPS Cash & Carry shop. Most focused function of this system is to allow customer to add selected product to their shopping cart and do checkout safely from the system. Another scope of this system is, the OGSA system must a user-friendly system and easy to access the system for customers, admin and staffs.

REFERENCE

- Cohen, Sir John Edward [Jack] [formerly Jacob Edward Kohen] (1898–1979), grocer and creator of Tesco stores (Vol. 1). (2004). <https://doi.org/10.1093/ref:odnb/30949>
- HappyFresh | Crunchbase. (n.d.). Retrieved May 28, 2019, from <https://www.crunchbase.com/organization/happyfresh#section-overview>
- 10 best websites to shop for groceries online | Stuff. (n.d.). Retrieved April 30, 2019, from <https://www.stuff.tv/my/features/10-best-websites-shop-groceries-online>
- 20 Online Grocery Delivery Services in Malaysia - makchic. (n.d.). Retrieved April 30, 2019, from <https://www.makchic.com/best-online-grocery-delivery-services-in-malaysia/>
- CMS. (2005). SELECTING A DEVELOPMENT APPROACH. Retrieved from <https://www.cms.gov/research-statistics-data-and-systems/cms-information-technology/xlc/downloads/selectingdevelopmentapproach.pdf>
- Tesco Stores (Malaysia) Sdn. Bhd.: Private Company Information - Bloomberg. (n.d.). Retrieved April 30, 2019, from <https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=9068769>
- Waterfall Project Management Methodology · Blog · ActiveCollab. (n.d.). Retrieved April 30, 2019, from <https://activecollab.com/blog/project-management/waterfall-project-management- methodology>